

# CSE341 Theory Assignment 01

**Total Marks - 15**

1. An oven is a heating appliance used to warm or cook food in houses. X is used in the oven so that it can perform limited tasks like taking inputs from the user and heat the food accordingly. The overall system has to take small space and processing power to run. Explain with at least 4 logical reasons whether X is a microprocessor or microcontroller. **[Marks - 2]**
  
2. Suppose we have a microcontroller with a data bus of size 16 bit and address bus of size 20 bit. **[Marks - 1 x 3 = 3]**
  - a) Find the maximum size of memory that can be used in this system.
  - b) What happens if we use a memory of 0.5 MB. Explain briefly whether it is fully utilized or not.
  - c) What happens if we use a memory of 5 MB. Explain briefly whether it is fully utilized or not.
  
3. Suppose we have a memory of 60KB. What is the minimum size of the address bus that the system requires? **[Marks - 2]**
  
4. For the following questions, find the answer. **If it is invalid, provide a brief logical explanation. [Marks - 1 x 4 = 4]**
  - a) If the target location to be accessed is (FFEE2)h with the segment number of (5612)h. Calculate the value of the offset.
  - b) The segment number is (7123)h and the offset is (23B1)h. Calculate the physical address.
  - c) The segment number is (431A)h and the memory location to be accessed is (26B12)h. Calculate the offset value.
  - d) The offset is 1234h and the physical address is F1230h. Calculate the segment number.

5. The 18th address of a segment is (42571)h and the offset is (A123)h. Find the starting address of the segment and the corresponding segment number. Find the target address that has to be accessed. **[Marks - 1+1 = 2]**

6. Find 4 different logical address for these following physical address example:  
**[Marks - 1x2 = 2]**

a) 541D7h

b) 00021h